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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/036,485	01/07/2002	Kiyoshi Arita	MEIC: 118	3565

7590 12/24/2002

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EXAMINER

GEYER, SCOTT B

ART UNIT	PAPER NUMBER
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2829

DATE MAILED: 12/24/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/036,485

Applicant(s)

ARITA ET AL.

Examiner

Scott B. Geyer

Art Unit

2829

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 January 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

2. The drawings as submitted by the applicant on January 7th, 2002 are acceptable.

Specification

3. The disclosure is objected to because of the following informalities:

Page 1, lines 9-10: sentence is unclear, especially "the semiconductor device has the substrate thinned as being thinned";

Page 2, line 6: change "A method of" to - - An exemplary embodiment of the invention is a method of - -;

Page 2, line 7: change "with" to - - while - -;

Page 6, line 8: change "silicone" to - - silicon - -.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-3 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Zajac (4,255,230).

As to **claim 1**, Zajac teaches a plasma processing method wherein an object is etched by a plasma inside a plasma processing chamber (column 2, lines 40-50). Zajac further teaches a plasma gas generated with sulfur hexafluoride and helium (column 1, lines 28-41).

As to **claim 2**, Zajac teaches a plasma formed by generating an electric field to the mounting unit 6, in figure 1 wherein an electric field is also applied to the top plate 4. The gas for generating the plasma is injected through a port 12 in the top of the chamber opposite the mounting unit 6.

As to **claim 3**, Zajac teaches etching an object, and more specifically the object is a polysilicon wafer (column 2, lines 40-46) which has first and second sides and is mounted on a mounting plate 6. As to the language of claim 3, lines 18-21, specifically "second side including a damaged-layer...removing the damaged-layer", applicant should note that this is merely "intended use" language which cannot be relied upon to define over Zajac, since Zajac discloses all of the claimed steps and their recited relationships. Moreover, the examiner will presume that the recited intended use is inherent in Zajac, since all of the claimed steps and the relationships therebetween are met by Zajac. Specifically, Zajac teach mounting a wafer in a chamber and etching the wafer, whereby the etching step removes material from the surface of the wafer. If the recited use is not inherent in Zajac, then this would mean that the applicant has failed to recite one or more critical features of the present invention.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zajac (4,255,230) as applied to claim 3 above, and further in view of Yoshida et al. (5,575,887).

As to ***claim 4***, Zajac does not teach a protective sheet affixed to a first side of a wafer wherein etching the object includes the sub-step of etching the wafer with the protective sheet mounted to the mounting unit. However, Yoshida et al. teach a plasma etching method for etching a wafer substrate 6, as shown in figure 1. One side of the wafer substrate has transistor components and is coated with an insulating film (protective sheet) 61 (column 3, lines 57 et seq.). The surface of the wafer opposite the side with circuitry, which is the surface to be etched by the plasma, is open to the plasma gas as shown in the plasma chamber in figure 1. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the method of Zajac with a protective sheet as taught by Yoshida et al. so as to protect the delicate electrical circuitry of the wafer during the etching process.

8. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zajac (4,255,230) and Yoshida et al. (5,575,887) as applied to claim 4 above, and further in view of Blalock et al. (6,413,875 B1).

As to **claim 5**, neither Zajac nor Yoshida et al. teach cooling of the mounting unit during the etching process. However, Blalock et al. teach actively cooling the entire chamber during the etching process, which would thus also cool the mounting unit, by flowing inert gas into the chamber (column 3, lines 17-23). At the time of the invention, it would have been obvious to modify the method of Zajac and Yoshida et al. to include a cooling step as taught by Blalock et al. so as to control and maintain etch selectivity.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott B. Geyer whose telephone number is (703) 306-5866. The examiner can normally be reached on weekdays, between 10:00am - 6:30pm. The examiner may also be reached via e-mail: scott.geyer@uspto.gov

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamand Cuneo can be reached on (703) 308-1233. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

SBG

S.B.G.
December 17, 2002


KAMAND CUNEO
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800